Evaluation of the Quantech Fluorimeter as a Liquid Chromatographic Detector

John D. Persons and James P. Hamilton*

Department of Chemistry and Engineering Physics, University of Wisconsin-Platteville, Platteville, WI 53818

High Performance Liquid Chromatographic (HPLC) instruments Like usually come standard with a UV absorbance detector. It is often desirable to use fluorescence detection for increased sensitivity but typical commercial HPLC fluorescence detectors cost $12k with $2k in annual maintenance costs for lamps if run regularly as in many analytical labs. Filter fluorimeters like Barnstead Internationals Quantech, at $5k, have minimal maintenance costs, are often already in house and have the potential to be very cost effective alternatives. Our task was to quantify the performance of the Quantech modified with a micro-flow cell relative to other systems.

Using a modified Quantech filter fluorometer, HPLC was used to determine the detection limit for Oregon Green 488 in MeOH/MeCN. Beer's Law Plots of peak area vs. concentration were use to determine the Detection Limit. These results were compared to the results from a commercial Shimadzu detector, and the standard absorbance detector on the HPLC. The Detection Limit for the Quantech was 4 parts per billion(ppb), 10 times lower than the Shimadzu, and 1000 times lower than the absorbance detector. Noise levels were much lower with the Quantech. The modified fluorometer, which many facilities already have is a viable option for a sensitive HPLC fluorescence detector.

* Author to whom correspondence should be addressed.